

Claims

1. A method of forming a component for an electrochemical converter, comprising the steps of:
 - casting a first slurry into a layer to form a first tape;
 - casting a second slurry into a layer to form a second tape;
 - laminating the first tape to the second tape to form a laminated structure; and
 - hot pressing the laminated structure using a combination of heat and pressure to form a sintered structure.
2. The method of claim 1, wherein the first slurry comprises a powder comprising chromium.
3. The method of claim 2, wherein the powder comprises at least 95% chromium.
4. The method of claim 1, wherein the second slurry comprises a powder comprising lanthanum chromite.
5. The method of claim 1, further comprising the step of trimming one of said first tape and said second tape.
6. The method of claim 1, further comprising the step of trimming the laminated structure.
7. The method of claim 1, further comprising the step of trimming the sintered structure.
8. The method of claim 1, further comprising the step of coating the sintered structure with a compound.
9. A component for an electrochemical converter comprising:

a first layer comprising a material having a composition that is at least 95% chromium; and

a second layer comprising lanthanum chromite laminated to the first layer, wherein the first layer and the second layer are hot pressed using a combination of heat and pressure to form the component.

10. The component of claim 9, wherein the component has a thickness of between about 0.01 and about 0.03 inches.

11. The component of claim 9, wherein one of the first and second layer forms a flat surface for opposing a textured surface of an adjacent electrolyte plate forming a flow passage in a stacked assembly that includes the interconnector plate.

12. The component of claim 9, wherein one of the first and second layer forms a textured surface for opposing a flat surface of an adjacent electrolyte plate forming a flow passages in a stacked assembly that includes the interconnector plate.

13. A method of forming a high density component, comprising the steps of:
casting a slurry material into a sheet; and
applying heat and pressure to sinter the sheet to form a sintered structure.

14. The method of claim 13, wherein the step of applying heat and pressure forms a sintered structure having a specific density of at least 96%.

15. The method of claim 13, further comprising the step of providing the material as raw material in a powder form.

16. The method of claim 13, further comprising the step of laminating the green sheet prior to the step of applying heat and pressure.

17. The method of claim 13, further comprising the step of sintering the green sheet prior to the step of applying heat and pressure.

18. The method of claim 13, wherein the material comprises one of: silicon carbide SiC, high chromium alloys, chromium iron alloys (Cr-5wt%Fe-1wt% Y_2O_3), chromium magnesium alloys (Cr-5wt%Ni-1wt%MgO) and mixtures thereof.

19. The method of claim 13, further comprising the step of coating the sintered structure with a compound.

20. The method of claim 19, wherein the step of coating comprises using plasma spray, chemical vapor deposition, or physical vapor deposition techniques.

21. A component for an electrochemical converter formed by the method of claim 13.

22. The component of claim 21, wherein the component has a thickness of between about 0.01 and about 0.03 inches.

23. An interconnector plate for an electrochemical converter formed by the method of claim 13.

24. The interconnector plate of claim 23, wherein material forming the interconnector plate has a composition that is at least 95% chromium.

25. An interconnector plate for an electrochemical converter formed by the method of claim 13, wherein the interconnector plate has flat surfaces which oppose textured surfaces of adjacent electrolyte plates forming flow passages in a stacked assembly that includes the interconnector plate.

26. An interconnector plate for an electrochemical converter formed by the method of claim 13, wherein the interconnector plate has textured surfaces which oppose flat surfaces of adjacent electrolyte plates forming flow passages in a stacked assembly that includes the interconnector plate.

27. A method of forming a high density thin plate, comprising the steps of:
- casting a slurry material into a sheet; and
- applying heat and pressure to sinter the sheet to a thickness of less than about 0.03 inches.